

CLAIMS

1. A radio communication apparatus comprising:

5 storing means for storing a first signal indicating that an error has been detected and a second signal indicating that reception has been performed correctly;

10 determining means for determining whether a variation in channel conditions is an improvement or a degradation based on said first signal and said second signal; and

controlling means for controlling a communication method according to a determination result of this determining means.

15 2. The radio communication apparatus according to claim 1, further comprising transmitting means for transmitting said determination result to another radio communication apparatus.

20 3. The radio communication apparatus according to claim 1, further comprising evaluating means for evaluating received signal quality and outputting quality information to said storing means; wherein:

25 said storing means stores a first signal and second signal weighted based on said quality information; and

said determining means determines a change of communication method based on said first signal and second

signal weighted based on said quality information.

4. The radio communication apparatus according to claim 1, wherein:

5 said storing means, when the sum of the stored number of said first signals and number of said second signals reaches a predetermined value, reports the received number of said first signals and number of said second signals to said determining means; and

10 said determining means calculates a retransmission ratio whereby the number of said first signals is divided by the number of said second signals, and if said retransmission ratio is less than a predetermined value, determines that channel conditions have improved, and
15 if said retransmission ratio is equal to or greater than said predetermined value, determines that channel conditions have degraded.

5. The radio communication apparatus according to claim 20 1, wherein:

 said storing means reports to said determining means the number of said first signals received between the most recent said second signal received and a previously received said second signal; and

25 said determining means, when said number of said first signals reported by said storing means is less than a predetermined value, determines that channel conditions have improved, and if equal to or greater than said

predetermined value, determines that channel conditions have degraded.

6. The radio communication apparatus according to claim 5 1, wherein said determining means, when a said first signal is received, conveys a determination result to said controlling means.

7. The radio communication apparatus according to claim 10 1, wherein said determining means, when a said second signal is received, conveys a determination result to said controlling means.

8. A radio communication apparatus comprising controlling 15 means for controlling a communication method according to a determination result transmitted from the radio communication apparatus according to claim 2.

9. The radio communication apparatus according to claim 20 1, wherein said controlling means, in the case of information that a determination result has degraded, halts transmission for a fixed time.

10. The radio communication apparatus according to claim 25 1, wherein said controlling means changes a spreading factor according to a determination.

11. The radio communication apparatus according to claim

10, wherein said controlling means, in the case of information that a determination result has improved, decreases the spreading factor.

5 12. The radio communication apparatus according to claim 10, wherein said controlling means, in the case of information that a determination result has degraded, increases the spreading factor.

10 13. The radio communication apparatus according to claim 10, wherein said controlling means sets an upper limit for a change of spreading factor.

14. The radio communication apparatus according to claim 1, wherein said controlling means changes a transmission rate according to a determination.

15. The radio communication apparatus according to claim 14, wherein said controlling means, in the case of information that a determination result has improved, increases the transmission rate.

16. The radio communication apparatus according to claim 14, wherein said controlling means, in the case of information that a determination result has degraded, decreases the transmission rate.

17. The radio communication apparatus according to claim

14, wherein said controlling means sets a lower limit for a change of transmission rate.

18. The radio communication apparatus according to claim 1, wherein said controlling means changes a modulation method according to a determination.

19. The radio communication apparatus according to claim 18, wherein said controlling means, in the case of information that a determination result has improved, increases the modulation M-ary number.

20. The radio communication apparatus according to claim 18, wherein said controlling means, in the case of information that a determination result has degraded, decreases the modulation M-ary number.

21. The radio communication apparatus according to claim 1, wherein said controlling means changes a coding rate according to a determination.

22. The radio communication apparatus according to claim 21, wherein said controlling means, in the case of information that a determination result has improved, increases the coding rate.

23. The radio communication apparatus according to claim 21, wherein said controlling means, in the case of

information that a determination result has degraded,
decreases the coding rate.

24. The radio communication apparatus according to claim
1, wherein said controlling means changes a carrier
frequency according to a determination.

25. The radio communication apparatus according to claim
1, wherein said controlling means changes a transmit
antenna according to a determination.

26. The radio communication apparatus according to claim
1, wherein said controlling means changes transmit
antenna array directivity according to a determination.

27. The radio communication apparatus according to claim
1, wherein said controlling means changes a transmit
antenna directivity beam width according to a
determination.

28. The radio communication apparatus according to claim
27, wherein said controlling means, in the case of
information that a determination result has improved,
narrows the transmit antenna directivity beam width.

29. The radio communication apparatus according to claim
27, wherein said controlling means, in the case of
information that a determination result has degraded,

increases the transmit antenna directivity beam width.

30. The radio communication apparatus according to claim
27, wherein said controlling means sets a limit for a
5 change of transmit antenna directivity beam width.

31. A base station apparatus provided with a radio
communication apparatus, said radio communication
apparatus comprising:

10 storing means for storing a first signal indicating
that an error has been detected and a second signal
indicating that reception has been performed correctly;

determining means for determining whether a
variation in channel conditions is an improvement or a
15 degradation based on said first signal and said second
signal; and

controlling means for controlling a communication
method according to a determination result of this
determining means.

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32. A communication terminal apparatus provided with a
radio communication apparatus, said radio communication
apparatus comprising:

25 storing means for storing a first signal indicating
that an error has been detected and a second signal
indicating that reception has been performed correctly;

determining means for determining whether a
variation in channel conditions is an improvement or a

degradation based on said first signal and said second signal; and

controlling means for controlling a communication method according to a determination result of this
5 determining means.

33. A radio communication method comprising:

a storing step of storing a first signal indicating that an error has been detected and a second signal
10 indicating that reception has been performed correctly;

a determining step of determining whether a variation in channel conditions is an improvement or a degradation based on said first signal and said second signal; and

15 a control step of controlling a communication method according to a determination result of this determining step.